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BUSINESS FINANCE

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Business Finance™

Radio Shack®
A DIVISION OF TANDY CORPORATION
FORT WORTH, TEXAS 76102

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10 9 8 7 6 5 4 3 2 1

Table of Contents

Introduction 1
  Backing Up Your Programs 2
  Loading Business Finance 2
  Starting the Programs 2
Internal Rate of Return 3
  Calculating the Present Value 3
  Finding the Internal Rate of Return 4
Bond Price and Yield 6
  Calculating Bond Prices 6
  Finding the Annual Yield of a Bond 7
Loans and Annuities 8
  Finding the True Interest Rate 8
  Finding Payment Amounts 9
  Finding the Amount of a Loan 10
  Finding the Number of Payments 11
Days and Dates 11
  Finding a Day of the Week 12
  Finding the Number of Days
    Between Dates 13
  Finding Days Ago and Days Ahead 13
Future Value 14
  Finding the True Interest Rate 15
  Calculating Payment Amounts 15
  Finding the Future Value of a Fund 16
  Finding the Number of Payments 17
Interest Formulas 19
  Single-Payment Compound Amounts . . 19
  Single-Payment Present Worth 20
  Equal-Payment-Series
    Compound Amount 21
  Equal-Payment-Series
    Sinking Fund 22
  Equal-Payment-Series
    Capital Recovery Amount 22
  Equal-Payment-Series Present Worth . . 23
Depreciation 25
  Figuring Depreciation 25
Appendices
  A—Making a Backup 28
  B—Maintenance 29

Introduction

The Business Finance package is a group of seven programs which performs a variety of calculations used in business finance applications.

The seven programs are:

1. **Internal Rate of Return** (IRR)—Calculates the rate of return on an investment or property which produces revenue, as well as required present value or initial cost. The IRR program can also be used for investments which produce annual revenue.
2. **Bond Price and Yield** (BONDS)—Solves problems related to coupon-type bonds which produce a fixed annual return (coupon value) for each year of a bond's life. The BONDS program can figure the effective annual yield (in percent) or find the selling price of the bond.
3. **Loans and Annuities** (LOANS)— Finds the true annual interest rate, present value, amount of payment, or number of payments for a loan or an annuity. The sum of all payments and total interest paid are also calculated.
4. **Dates** (DATES)—Finds the day of the week for a given date, the number of days between two dates, and the date for a day "x" days ago or "x" days following a given date.
5. **Future Value** (FUTURE)—Performs calculations dealing with future values of loans, such as interest rate, amount of payment, future value, and number of payments.
6. **Interest Formulas** (INTFORM)—Performs common interest calculations, including single payment compound amount, single payment present worth, equal payment series compound amount, equal payment series sinking fund, equal payment series capital recovery amount, and equal payment series present worth.
7. **Depreciation** (DEPREC)—Given the initial or acquisition cost, life in years, and final value of an item or property, DEPREC calculates depreciation and current value by straight line, double declining, or sum-of-years-digits methods.

Backing Up Your Programs

The first thing you should do as owner of the Business Finance package is make a copy, or Backup, of your program tape. This assures you that you will not lose important program information due to accident or mishap. Detailed instructions for making a Backup are in Appendix A.

Loading Finance Programs

Each program is loaded from tape in a similar manner. To load any of the Business Finance programs, follow these instructions:

1. Install the computer into the Cassette Interface and connect the Cassette Interface to the cassette recorder. Turn on the computer by pressing the ON key.

2. Place the Business Finance cassette in the recorder and rewind the tape to the beginning, or position the tape to a point just prior to the desired program. When the tape is in position, press the Stop button. We recommend that the volume control setting be between 5 and 7 on your recorder (or between 9 and 10 if you are using a Minisette-9). If your recorder has a tone control, set it at maximum treble. Turn the Remote switch on the Printer/Cassette Interface ON. Now press the recorder's Play button.

3. Make sure the computer is in RUN mode. Type: CLOAD" name " and press ENTER. (Name refers to the name of the program to be loaded.) For example, to load the Depreciation program, type: CLOAD" DEPREC" and press ENTER. While the computer searches for the correct program on the tape, the name of each program it finds appears on the display. The > prompt will reappear when the loading process is complete.

Starting the Programs

Each program may be started either by typing RUN and pressing ENTER or by pressing DEF SPACE.

Internal Rate of Return

The IRR program performs calculations related to internal rates of return. Given the future value of an investment, the term of the investment, its annual return, and its rate of return (in percent), IRR calculates the present or initial value of the investment. When supplied with the present and future value, the term of the investment, and its annual return, IRR figures the rate of return on the investment.

Load the program by typing: C L O A D " I R R " and pressing ENTER. When the > prompt appears, start the program by typing: R U N and pressing ENTER, or by pressing DEF SPACE.

The program name and a copyright notice are displayed, followed by the menu. Each menu line appears briefly, after which the menu is repeated until an option is chosen. To speed up the display of options, press SPACE. You may choose an option at any time during the menu display, not just when that option appears on the display. Following are the opening displays:

```
INTERNAL RATE OF RETURN
Copr. 1982 Tandy Corp.
Select Function:
Find present value:
A Find IRR: B
Exit program: X
```

Calculating the Present Value

To find the present value of an investment, press A at the menu. The computer displays several questions. The first question is: Future value? $__. Type the future worth of the investment in dollars, and press ENTER.

Next, you are asked: Number of years? __. Type the number of years in the investment's life, and press ENTER.

The display now shows: Annual return? $__. Type the dollar amount of the annual return on the investment, and press ENTER.

The last question you are asked is: Rate of return (%)? _. Type the rate of return, and press ENTER. As an example, suppose that the rate of return is 7.5%. You would enter 7 . 5, **not** .075. The computer takes care of the transition for you. Throughout the Business Finance package, percentage rates are entered in this way.

After the last question has been answered, the display shows that the computer is * CALCULATING * Next, you hear two short beeps, and the present value is displayed. Press ENTER to return to the menu, from where you may choose another option.

Example

Find the present value of an investment which has a rate of return of 8.96%, will earn $1200.00 per year, and be worth $18,000.00 in five years.

Computer displays:	**You type:**
>	CLOAD" IRR ENTER
IRR	
>	RUN ENTER

Computer displays:	**You type:**
INTERNAL RATE OF RETURN	
Copr. 1982 Tandy Corp.	
Select Function:	A
Future value? $_	18000 ENTER
Number of years? _	5 ENTER
Annual return? $_	1200 ENTER
Rate of return (%)? _	8.96 ENTER
* CALCULATING *	
Present value $16392.68	ENTER
Select Function:	

Finding the Internal Rate of Return

To find the internal rate of return on an investment, press B at the menu. You are asked for the present and future value of the investment, along with the number of years in the investment's life, and the annual amount of return. Answer each question, pressing ENTER after typing the answer.

When you have answered all the questions, you'll hear two short beeps. Next, the answer is displayed. Press ENTER to return to the menu.

Example

What is the rate of return on an investment of $10,000.00 if the value one year from now is $12,500.00?

Computer displays:	**You type:**
Select Function:	B
Present value? $_	10000 ENTER
Future value? $_	12500 ENTER
Number of years? _	1 ENTER
Annual return? $_	0 ENTER
Rate of return = 25%	ENTER
Select Function:	X (To exit the program.)
>	

Note that the result would be the same if both Present value? and Future value? had been answered with 10,000 and Annual return? had been answered with 2500. This type of entry might be applicable for a property which did not change in material value but produced annual income.

Bond Price and Yield

BONDS calculates bond prices and yields. Given the bond's value at maturity, the term of the bond, its coupon value, and its yield (in percent), the program calculates the bond's initial price. Given the bond's initial cost, its maturity value, its term, and its coupon value, BONDS returns the percent yield of the bond.

Load the program by typing: CLOAD"BONDS and pressing ENTER. When the > prompt appears, start the program by typing: RUN and pressing ENTER, or by pressing DEF SPACE.

The program name and a copyright notice are displayed, followed by the menu. Each menu line appears briefly, after which the menu is repeated until an option is chosen. To speed up the display of options, press SPACE. You may choose an option at any time during the menu display, not just when that option appears on the display. Following are the opening displays:

```
BONDS
Copr. 1982 Tandy Corp.
Select Function:
Find bond price: P
Find bond yield: Y
Exit program: X
```

Calculating Bond Prices

To find the price of a coupon bond, press P at the menu. The computer asks you several questions, the first of which is: Maturity value? $__. Type the value of the bond at its maturity, and press ENTER.

The next question is: Number of years? __. Type the number of years over which maturity is reached, and press ENTER. This question is followed by: Coupon value? $__. Type the coupon value of the bond, and press ENTER.

Finally, the display asks: Bond yield? (%) __. Answer by typing the annual percentage yield of the bond and pressing ENTER. The computer performs the calculations and displays the bond's purchase price. Press ENTER to return to the menu.

Example

What is the purchase price of a $25,000.00 bond maturing in 12 years, with a yield of 9.7% and an annual coupon value of $1,000.00?

Computer displays:	You type:
>	CLOAD" BONDS" ENTER
BONDS	
>	RUN ENTER
BONDS	
Copr. 1982 Tandy Corp.	
Select Function:	P
Maturity value? $_	25000 ENTER
Number of years? _	12 ENTER
Coupon value? $_	1000 ENTER
Bond yield? (%) _	9.7 ENTER
Bond price is $15146.14	ENTER
Select Function:	

Note: To use this option for bonds which do not return an annual amount, enter 0 for the coupon value.

Finding the Annual Yield of a Bond

To find the annual percentage yield of a bond, press Y at the menu. You are asked for the bond's purchase price, its value at maturity, the number of years over which it matures, and its coupon value. Answer each question, pressing ENTER after each answer.

When you have answered all the questions, the computer displays: *** COMPUTING ***, after which the percentage yield on the bond is displayed. Press ENTER to return to the menu.

Example

Find the annual yield of a 20-year $5,000.00 bond, bought for $3,800.00, with an annual coupon value of $250.00.

Computer displays:	You type:
Select Function:	Y
Bond price? $_	3800 ENTER
Maturity value? $_	5000 ENTER
Number of years? _	20 ENTER

Computer displays:	**You type:**
Coupon value? $__	2 5 0 ENTER
*** COMPUTING ***	
Bond yield is 7.323%	ENTER
Select Function:	X (To exit the program.)
>	

Note: When dealing with one-year bonds or multiple-year bonds without coupons, enter 0 for the coupon value.

Loans and Annuities

LOANS performs most common loan calculations, such as true interest rates, amount of payments, amount of the loan, and number of payments. Load the program by typing: C L O A D " L O A N S " and pressing ENTER.

When the > prompt appears, start the program either by typing: R U N and pressing ENTER or by pressing DEF SPACE. The program name and a copyright notice are displayed, followed by the menu. Each menu line appears briefly, after which the menu is repeated until an option is chosen. To speed up the display of options, press SPACE. You may choose an option at any time during the menu display, not just when that option appears on the display. Following are the opening displays:

```
LOANS AND ANNUITIES
Copr. 1982 Tandy Corp.
Select Function:
Find rate: R
Find payment: P
Find loan amount: L
Find number of payments: N
Exit program: X
```

Throughout this program, dollar amounts are calculated and rounded off to the nearest cent. Interest amounts are rounded off to the nearest .001 percent.

Note: When you use LOANS for annuity calculations, consider the loan amount for which you are asked to be the same as the present value of an annuity.

Finding the True Interest Rate

To find the true interest rate of a loan or an annuity, press R at the menu. The program first asks: Loan amount? $__. Type the dollar amount of the loan, and press ENTER.

The next question is: Payment? $_. Enter the dollar amount of each payment made, and press ENTER. The display now asks: Number of payments? _. Type the total number of installments to be paid for the loan, and press ENTER.

The last question is: Periods per year? _. Type the number of times per year an installment is paid, and press ENTER. The computer displays the true annual interest rate. Press ENTER, and the display shows the total sum of payments. Press ENTER again to see the sum of interest paid on the loan. Press ENTER one more time to return to the menu.

Example

You have borrowed $20,000.00 to improve your small business. Payments are $215.00 each month for 20 years. What is the annual interest rate on the loan?

Computer displays:	You type:
>	CLOAD" LOANS" ENTER
LOANS	
>	RUN ENTER
LOANS AND ANNUITIES	
Copr. 1982 Tandy Corp.	
Select Function:	R
Loan amount? $_	20000 ENTER
Payment? $_	215 ENTER
Number of payments? _	240 ENTER
Periods per year? _	12 ENTER
True rate is 11.62%	ENTER
Sum of payments $51600	ENTER
Sum of interest $31600	ENTER
Select Function:	

Finding Payment Amounts

To find the amount of each installment paid on a loan or an annuity, press P at the menu. You are asked for the amount of the loan, the annual interest rate, the number of payment periods per year, and the total number of payments to be made. Type the answer to each question, pressing ENTER after each answer.

In a moment, the computer displays the amount of each payment. Press ENTER, and the display shows the sum of payments. Press ENTER again to see the sum of interest paid on the loan. To return to the menu, press ENTER one more time.

Example

You have borrowed $8,000.00 for three years, with an interest rate of 14.5%. Payments are to be made in quarterly installments. How much will each payment be?

Computer displays:	**You type:**
Select Function:	P
Loan amount? $_	8 0 0 0 ENTER
True interest rate in %?_	1 4 . 5 ENTER
Periods per year? _	4 ENTER
Number of payments? _	1 2 ENTER
Payment is $833.97	ENTER
Sum of payments $10007.64	ENTER
Sum of interest $2007.64	ENTER
Select Function:	

Finding the Amount of a Loan

To find the dollar amount of a loan (before interest is added), press L at the menu. You are asked for the dollar amount of each installment, the interest rate on the loan, the number of installment periods per year, and the total number of installments to be paid. Answer each question, pressing ENTER after each answer.

The computer calculates and displays the initial loan amount. Press ENTER to see the sum of payments. Press ENTER again, and the sum of interest is displayed. Press ENTER once more to return to the menu.

Example

You are planning to add a greenhouse with an eastern exposure to your home. You can afford to pay $150.00 per month on a 5-year home improvement loan. How much can you borrow, given an annual interest rate of 19%?

Computer displays:	**You type:**
Select Function:	L
Payment? $_	1 5 0 ENTER
True interest rate in %? _	1 9 ENTER
Periods per year? _	1 2 ENTER
Number of payments? _	6 0 ENTER
Loan amount is $5782.45	ENTER

Computer displays:	You type:
Sum of payments $9000	ENTER
Sum of interest $3217.55	ENTER
Select Function:	

Finding the Number of Payments

To find the total number of installments to be paid on a loan, press N at the menu. You are asked for the dollar amount of the loan, the interest rate, the number of installments per year, and the amount of each installment. Type the answer to each question, pressing ENTER after each answer.

The display shows the number of payments necessary. Press ENTER, and the sum of payments is displayed. To see the sum of interest paid, press ENTER again. To return to the menu, press ENTER once more.

Be aware that certain combinations of values do not have a valid solution, for example, if a payment amount is too low to **ever** pay back a loan at a given interest rate. In such cases, the computer beeps three times and displays: INVALID DATA! To clear this message and try again, press ENTER. The menu is displayed.

Example

Given an annual interest rate of 21%, how many semi-annual payments of $800 are required to pay back a loan of $7,500.00?

Computer displays:	You type:
Select Function:	N
Loan amount? $_	7 5 0 0
	ENTER
True interest rate in %? _	2 1 ENTER
Periods per year? _	2 ENTER
Payment? $_	8 0 0 ENTER
42 payments	ENTER
Sum of payments $33322.6	ENTER
Sum of interest $25822.6	ENTER
Select Function:	X (To exit the program.)
>	

Days and Dates

DATES finds the day of the week for a given date, calculates the number of days between two dates, and calculates the date for a number of days before or after a given date.

This program is valid for all dates from March 1, 1900 through February 29, 2100. All dates are entered and displayed in a MM/DD/YYYY format. When you enter a date, the month and day may be one digit, but the year must always contain four digits.

Load DATES by typing: CLOAD "DATES" and pressing ENTER. When the > prompt appears, start the program either by typing: RUN and pressing ENTER, or by pressing DEF SPACE.

The program name and copyright notice are displayed, followed by the menu. Each menu option is displayed briefly, and the menu repeats itself until one of the options is chosen. To speed up the menu display, press SPACE. You may choose an option at any time during the menu display, not just when that option is displayed. Following are the opening displays:

```
DAYS AND DATES
Copr. 1982 Tandy Corp.
Select Function:
Find day of week: A
Days between dates: B
Date days hence/ago: C
```

Finding a Day of the Week

To find the day of the week for a given date, press A at the menu. The display shows: Enter date? (MM/DD/YYYY)__. Type the date for which you wish to find the day of the week, and press ENTER. The computer displays the weekday for the date you entered. Press ENTER to return to the menu.

Example

On what weekday did July 26, 1982, fall?

Computer displays:	**You type:**
>	CLOAD " DATES" ENTER
DATES	
>	RUN ENTER
DAYS AND DATES	
Copr. 1982 Tandy Corp.	
Select Function:	A
Enter date? (MM/DD/YYYY)__	7/26/ 1982 ENTER
Monday	ENTER
Select Function:	

Finding the Number of Days Between Dates

To find the number of days between two dates, press B at the menu. The display asks: First date? (MM/DD/YYYY)__. Type the beginning date, and press ENTER. Next, the display shows: Second date? (MM/DD/YYYY)__. Type the ending date, and press ENTER. (You can actually enter the ending date first and the beginning date last—the computer doesn't care!)

The computer displays the number of days between the two dates, including the ending date. For instance, there is ONE day between January 1, 1982, and January 2, 1982.

Example

How many days are there between June 9, 1982 and September 15, 1983?

Computer displays:	You type:
Select Function:	B
First date? (MM/DD/YYYY)__	6 / 9 / 1 9 8 2 ENTER
Second date? (MM/DD/YYYY)__	9 / 1 5 / 1 9 8 3 ENTER
463 days between dates Select Function:	ENTER

Finding Days Ago and Days Ahead

To find a date that is a certain number of days before or after a given date, press C at the menu. Since this option is easier to understand in practical application, we'll explain it by using sample dates. We'll suppose that you want to find the date for 50 days before December 25, 1980.

After you press C the display shows Ref date? (MM/DD/YYYY)__. Type your date in the requested format, and press ENTER. The reference date for this sample would be 12/25/1980.

Next, the computer asks: Days hence (+)/ago (-)? __. This question asks for the number of days from the reference date to the date you want to find. If you enter a positive number, the program finds the date for the number of days **past** the reference date. If you enter a negative number, the program finds the date for the number of days **before** the reference date. Type the number, and press ENTER. (You don't have to type a + sign for positive numbers.) For our sample, the entry would be - 5 0 ENTER.

The display shows the date you requested and its day of the week. Our sample information would return 11/5/1980 Wednesday. Press ENTER to return to the menu.

Example

What is the date and weekday for five weeks past August 17, 1982?

Computer displays:	**You type:**
Select Function:	C
Ref date? (MM/DD/YYYY)__	8 / 1 7 / 1 9 8 2 ENTER
Days hence (+)/ago (-)? __	3 5 ENTER
9/21/1982 Tuesday	ENTER
Select Function:	X (To exit the program.) >

Future Values

The FUTURE program performs calculations related to funds or other investments. Given a set of information, the program will calculate the interest rate, payment amount, number of payments, or future value of a fund or investment.

Load FUTURE by typing: C L O A D " F U T U R E " and pressing ENTER. When the > prompt appears, start the program either by typing: R U N and pressing ENTER, or by pressing DEF SPACE.

The program name and copyright notice are displayed, followed by the menu. Each menu option is displayed briefly, and the menu repeats itself until one of the options is chosen. To speed up the menu display, press SPACE. You may choose an option at any time during the menu display, not just when that option is displayed. Following are the opening displays:

```
FUTURE VALUES
Copr. 1982 Tandy Corp.
Select Function:
Find rate: R
Find payment: P
Find future value: F
Find number of payments: N
Exit program: X
```

All dollar amounts are calculated and rounded off to the nearest cent. Interest amounts are rounded off to the nearest .001 percent.

Finding the True Interest Rate

To find the true annual interest rate on a fund, press R at the menu. The display shows: Future value? $__. Type the future value of the fund, and press ENTER.

The display next asks: Payment? $__. Type the amount of each payment to be made into the fund, and press ENTER.

The next question is: Number of payments? __. Type the total number of installments to be paid into the fund, and press ENTER.

The last question asks: Periods per year? __. Type the number of payments per year into the account, and press ENTER. The display calculates and displays the true interest rate on the account. Press ENTER, and the display shows the sum of all payments made into the account. Press ENTER again to see the total amount of interest collected on the fund. To return to the menu, press ENTER once more.

Example

What is the interest rate that will yield a future value of $25,000.00 in ten years, with monthly payments of $125.00 into the account?

Computer displays:	**You type:**
>	CLOAD"FUTURE" ENTER
>	RUN ENTER
FUTURE VALUES	
Copr. 1982 Tandy Corp.	
Select Function:	R
Future value? $__	25000 ENTER
Payment? $__	125 ENTER
Number of Payments? __	120 ENTER
Periods per year? __	12 ENTER
True rate is 9.58%	ENTER
Sum of payments $15000	ENTER
Interest is $10000	ENTER
Select Function:	

Calculating Payment Amounts

To find the amount of each payment to be made into a fund, press P at the menu. You are asked for the future value of the investment, its annual interest rate, the number of installment periods per year, and the total number of payments to be made. Type the answer to each question, pressing ENTER after each answer.

The computer calculates and displays the payment amount. Press ENTER to display the sum of all payments. To see the amount of interest accrued, press ENTER again. To return to the menu, press ENTER one more time.

Example

Suppose you are paying into a sinking fund which earns 8.72% annual interest. Calculate the amount of payments made semi-annually which will yield $30,000.00 in 12 years.

Computer displays:	**You type:**
Select Function:	P
Future value? $_	3 0 0 0 0 ENTER
True interest rate in %? _	8 . 7 2 ENTER
Periods per year? _	2 ENTER
Number of payments? _	2 4 ENTER
Payment is $732.79	ENTER
Sum of payments $17586.96	ENTER
Interest is $12413.04	ENTER
Select Function:	

Finding the Future Value of a Fund

To find the future worth of a fund or investment, press F at the menu. The program asks you for the payment amount, the annual interest rate, the number of installment periods per year, and the total number of payments to be made into the fund. Answer each question, pressing ENTER after typing each answer.

In a moment, the computer displays the future value of the fund. Press ENTER, and the display shows the sum of all payments made into the fund. To display the total amount of interest accrued, press ENTER again. Press ENTER once more to return to the menu.

Example

You are paying $200.00 per month into a fund which accrues interest at an annual rate of 6.25%. What will the fund be worth after 15 years?

Computer displays:	**You type:**
Select Function:	F
Payment? $_	2 0 0 ENTER
True interest rate in %? _	6 · 2 5
	ENTER
Periods per year? _	1 2 ENTER
Number of payments? _	1 8 0
	ENTER
Future value is $59419.55	ENTER
Sum of payments $36000	ENTER
Interest is $23419.55	ENTER
Select Function:	

Finding the Number of Payments

To find the total number of payments into a fund or investment, press N at the menu. The program asks you for the future value of the fund, its annual interest rate, the number of installments paid per year, and the amount of each payment. Answer each question, pressing ENTER after each answer.

The computer calculates and displays the total number of payments which will be made into the fund. Press ENTER, and the display shows the sum of all payments. Press ENTER again, and you see the amount of interest accrued in the account. To return to the menu, press ENTER once more.

Note: The number of payments is rounded up to the next higher integer (e.g., 170.4 becomes 171).

Example

How many quarterly payments of $400.00 are required to yield $13,000.00, given an annual accrued interest of 9.1%?

Computer displays:	**You type:**
Select Function:	N
Future value? $_	1 3 0 0 0
	ENTER
True interest rate in %? _	9 · 1 ENTER
Periods per year? _	4 ENTER
Payment? $_	4 0 0
	ENTER
25 payments	ENTER
Sum of payments $9842.61	ENTER
Interest is $3157.39	ENTER

Computer displays:	You type:
Select Function:	x (To exit the program.)
>	

Interest Formulas

The INTFORM program performs common interest formula calculations on single-payment compound amounts and present values. INTFORM also calculates equal-payment series formulas: compound amounts, sinking funds, capital recovery amounts, and present values.

Load INTFORM by typing: CLOAD"INTFORMS" and pressing ENTER. When the > prompt appears, start the program either by typing: RUN and pressing ENTER, or by pressing DEF SPACE.

The program name and copyright notice are displayed, followed by the menu. Each menu option is displayed briefly, and the menu repeats itself until one of the options is chosen. To speed up the menu display, press SPACE. You may choose an option at any time during the menu display, not just when that option is displayed. Following are the opening displays:

```
INTEREST FORMULAS
Copr. 1982 Tandy Corp.
Select Function:
Single pmt cmpd amt: 1
Single pmt worth: 2
E.P.S. compound amount: 3
E.P.S. sinking fund: 4
E.P.S. capital recovery: 5
E.P.S. present worth: 6
Exit program: X
```

Single-Payment Compound Amounts

This option calculates the future value of an investment with a one-time payment (such as a Certificate of Deposit) at compounded interest. Choose this option by pressing 1 at the menu.

The display asks: Present worth? $__. Type the amount of the payment, and press ENTER. The display now shows: Percent interest? __. Type the interest rate earned on the payment, and press ENTER.

Next, the display shows: Number of periods? __. Type the number of periods in the life of the investment, and press ENTER. The display shows the future value of the investment. Press ENTER to return to the menu.

Example

What will the value of a $5000.00 deposit be in ten years, given 8% annual interest accrual?

Computer displays:	**You type:**
>	CLOAD" INTFORM" ENTER
INTFORM	
>	RUN ENTER
INTEREST FORMULAS	
Copr. 1982 Tandy Corp.	
Select Function:	1
Present worth? $__	5000 ENTER
Percent interest? __	8 ENTER
Number of periods? __	10 ENTER
Future worth $10794.62	ENTER
Select Function:	

Single-Payment Present Worth

This option, chosen by pressing 2 at the menu, calculates the present worth of a single payment to be made at some time in the future, assuming that compounded interest will be available on the present value.

After you press 2, the display asks for the following information: the future worth of your payment, the percent of interest drawn on the payment, and the number of periods for the term of the investment. Answer each question, pressing ENTER after each answer.

The display shows the present worth (or initial requirement) of the investment. Press ENTER to return to the menu.

Example

You want to earn $100,000.00 in 15 years through an initial investment. Annual interest is presently 12.5%. How much money must you initially invest?

Computer displays:	**You type:**
Select Function:	2
Future worth? $__	100000 ENTER

Computer displays:	**You type:**
Percent interest? _	1 2 . 5 ENTER
Number of periods? _	1 5 ENTER
Present worth $17088.82 Select Function:	ENTER

Equal-Payment-Series Compound Amount

Press 3 at the menu to find the future value of a series of equal payments, assuming compounded interest is available on the installments received.

The program asks for the amount of each payment received, the monthly interest rate available for the payments, and the number of periods in the life of the investment. If only an annual interest figure is available to you, or if the annual interest does not divide equally into monthly interest, enter the annual rate and divide it by 12 (e.g., 13% annual interest could be entered as 1 3 / 1 2). Answer each question, pressing ENTER after each answer.

The computer displays the future value of the investment. Press ENTER to return to the menu.

Example

You have a chance to buy out an investment which will pay you $120.00 per month for 12 years. 11% annual interest is available on the installments received and deposited in your account. (This interest equals approximately .917 per month, so let's make the computer do the math!) What is the total value of the account after all payments have been made?

Computer displays:	**You type:**
Select Function:	3
Payment? $_	1 2 0 ENTER
Percent interest? _	1 1 / 1 2 ENTER (11% annual interest spread over 12 months)
Number of periods? _	1 4 4 ENTER
Future worth $35620.08 Select Function:	ENTER

Equal-Payment-Series Sinking Fund

This option calculates the amount each payment must be to accumulate a given future worth, using the sinking-fund method. The formula uses compounded interest to arrive at the payment amount. Press 4 at the menu to choose this option.

The display asks for the future worth of the fund, the percentage of annual interest available on the fund, and the number of periods over which the fund is spread. Answer each question, pressing ENTER after each answer.

In a moment, the computer displays the amount of each payment to be made into the fund. To return to the menu, press ENTER.

Example

You want to accrue $80,000.00 in a sinking fund over 10 years. Interest is available at an annual rate of 14%. How much must each annual payment into the fund be?

Computer displays:	You type:
Select Function:	4
Future worth? $_	8 0 0 0 0 ENTER
Percent interest? _	1 4 ENTER
Number of periods? _	1 0 ENTER
Payment $4137.08	ENTER
Select Function:	

Equal-Payment-Series Capital Recovery Amount

This option figures the amount of each installment needed to pay off a given principal with interest, in a series of equal payments. Press 5 at the menu to choose this option.

The program asks for the present worth of the principal, the percent of annual interest to be added to the principal, and the number of installment periods. Answer each question, pressing ENTER after each answer.

The computer displays the amount of each installment. Return to the menu by pressing ENTER.

Example

You are buying a new automobile, financing $8,500.00 over four years. The annual interest rate is 18% (or 1.5% interest per month). What will your monthly payment be?

Computer displays:	**You type:**
Select Function:	5
Present worth? $__	8 5 0 0 ENTER
Percent interest? __	1 . 5 ENTER
Number of periods? __	4 8 ENTER
Payment $249.69	ENTER
Select Function:	

Note: The same result could have been attained by answering the Percent interest? question with 1 8 / 1 2, as we did in the example for Equal-Payment-Series Compound Amount.

Equal-Payment-Series Present Worth

This option, which is useful for figuring fair purchase prices of investments, calculates the present cash value of an equal payment series. Press 6 at the menu to choose this option.

You tell the computer the amount of each payment, the annual interest rate accrued on payments, and the number of payment periods by typing the answers and pressing ENTER.

The computer displays the present worth of the investment. Press ENTER to return to the menu.

Example

You can buy out an investment which pays you $225.00 per month for eight years. You can re-invest the installments received at 10% annual interest. What is the fair purchase price of the investment (its present cash worth)?

Computer displays:	**You type:**
Select Function:	6
Payment? $__	2 2 5 ENTER

Computer displays:	**You type:**
Percent interest? _	1 0 / 1 2 ENTER (10% annual interest spread over 12 months.)
Number of periods? _	9 6 ENTER
Present worth $14827.83	ENTER
Select Function:	X (To exit the program.)
>	

Depreciation

The DEPREC program calculates depreciation by three different methods: straight line, double declining, or sum-of-years. You supply the initial value, the final value, and the number of years over which depreciation will occur, and the computer shows you the depreciated worth, year-by-year.

Load DEPREC by typing: CLOAD"DEPREC" and pressing ENTER. When the > prompt appears, start the program either by typing: RUN and pressing ENTER, or by pressing DEF SPACE.

The program name and copyright notice are displayed, followed by the menu. Each menu option is displayed briefly, and the menu repeats itself until one of the options is chosen. To speed up the menu display, press SPACE. You may choose an option at any time during the menu display, not just when that option is displayed. Following are the opening displays:

```
DEPRECIATION
Copr. 1982 Tandy Corp.
Select Function:
Straight line: A
Double declining: B
Sum of years digits: C
Exit program: X
```

Figuring Depreciation Using Three Methods

To figure depreciation using any of the three methods, press the letter for the method you want to use at the menu display. The display asks: INITIAL value? $__. Type the initial worth of the investment, and press ENTER.

Next, the computer displays: FINAL value? $__. Type the final depreciated value, and press ENTER.

The last question asked is: NUMBER of years? __. Type the number of years over which the investment will depreciate, and press ENTER.

The display shows: Year = 1. Change? __. Press ENTER to see the amount by which the investment depreciates over the first year, and press ENTER again to see its value at the end of that year. If you wish to see the depreciation and value for a year other than the first year, you may enter that year's number (e.g., 15 for the amount of depreciation at the end of 15 years and the investment's value at that time).

The computer will beep twice and display the amount by which the investment depreciated during that one year. Press ENTER, and the display shows the current value of the investment at the end of that year. When no more depreciation is possible, the display shows: Depreciation complete. Press ENTER to return to the menu.

Example

1. You have purchased a rental property for $52,000.00 and decide to depreciate it over 30 years, using a straight-line method. The final value of the property will be $5,000.00. What is the depreciation value after 11 years? After 20 years?

Computer displays:	You type:
>	CLOAD "DEPREC" ENTER
DEPREC	
>	RUN ENTER
DEPRECIATION	
Copr. 1982 Tandy Corp.	
Select Function:	A
INITIAL value? $__	52000 ENTER
FINAL value? $__	5000 ENTER
NUMBER of years? __	30 ENTER
Year = 1. Change? __	11 ENTER (To see the 11th year's value.)
Year 11: depr. $1566.67	ENTER
Curr. value $34766.63	ENTER
Year = 12. Change? __	20 ENTER
Year 20: depr. $1566.67	ENTER
Curr. value $20666.6	ENTER
Year = 21. Change? __	31 (To finish the depreciation.)
Depreciation complete	ENTER
Select Function:	

2. You've bought a high-speed milling machine with a service life of five years. It cost $21,500.00 and has a scrap value of $1,200.00. Generate a depreciation schedule using the double declining balance method.

Computer displays:	You type:
Select Function	B
INITIAL value? $__	21500 ENTER
FINAL value? $__	1200 ENTER
NUMBER of years? __	5 ENTER
Year = 1. Change? __	ENTER

Computer displays:	You type:
Year 1: depr. $8600	ENTER
Curr. value $12900	ENTER
Year = 2. Change? _	(Continue pressing ENTER after each display.)
Year 2: depr. $5160	
Curr. value $7740	
Year = 3. Change? _	
Year 3: depr. $3096	
Curr. value $4644	
Year = 4. Change? _	
Year 4: depr. $1857.6	
Curr. value $2786.4	
Year = 5. Change? _	
Year 5: depr. $1114.56	
Curr. value $1671.84	
Year = 6. Change? _	
Depreciation complete	
Select Function:	

3. Depreciate the same milling machine by the sum-of-years digits method.

Computer displays:	You type:
Select Function:	C
INITIAL value? $_	2 1 5 0 0
	ENTER
FINAL value? $_	1 2 0 0
	ENTER
NUMBER of years? _	5 ENTER
Year = 1. Change? _	ENTER
Year 1: depr. $6766.67	ENTER
Curr. value $14733.33	(Continue pressing ENTER after each display.)
Year = 2. Change? _	
Year 2: depr. $5413.33	
Curr. value $9320	
Year = 3. Change? _	
Year 3: depr. $4060	
Curr. value $5260	
Year = 4. Change? _	
Year 4: depr. $2706.67	
Curr. value $2553.33	
Year = 5. Change? _	
Year 5: depr. $1353.33	
Curr. value $1200	
Year = 6. Change? _	
Depreciation complete	
Select Function:	X (To exit the program.)
>	

Appendix A—Making a Backup

A Backup is a tape copy of a program and is an extremely effective method of insuring that an accident or equipment fault will not result in the loss of software. Your first action as owner of the Business Finance Package should be to make working copies of the original cassette(s) and then put the original(s) away in a safe place.

Although it may be possible to make direct copies using two cassette recorders or on cassette duplicating equipment, the most reliable method is to use the computer itself to make the Backups. Also, for frequently used programs, you may wish to put them on separate cassettes for easier loading. Here are step-by-step instructions for making a Backup:

1. Install the computer in the Printer/Cassette Interface, and connect the Printer/Cassette Interface to the cassette recorder. Make sure the Remote switch is OFF.

2. Place the cassette containing the program(s) to be copied in the recorder and either rewind the tape to the beginning or position the tape to a blank area just prior to the desired program. Turn the Remote switch ON. Place the recorder in the Play mode. It is recommended that the volume control setting be between 5 and 7 on your recorder (or between 8 and 10 on a Minisette-9). If your recorder has a tone control, set it at maximum treble.

3. Turn on the computer, make sure that it is in RUN mode, and type: CLOAD" name ", and press ENTER. (Name refers to the name of the program to be copied.)

4. When the program has been loaded into the computer and the cassette has stopped, turn the Remote switch OFF, and rewind the recorder to the blank space just prior to the program. Turn the Remote switch ON, and put the recorder into the Play mode. Type: CLOAD?" name " and press ENTER.

This is the computer's verifying function. The recorder will compare the cassette program with the program in the computer's memory. If the load is good, the recorder will stop at the end of the program and the prompt sign (>) will reappear on the display. If an error occurred during the load verification, the display will show: ERROR 43. This means that the format of data to be loaded does not match the file format.

If the error message appears on the display, check the recorder volume setting, try the CLOAD function again, and verify the load.

5. When the program has been loaded successfully, remove the cassette and replace it with the cassette which is to receive the program copy. Turn the Remote switch OFF, and either rewind the tape to the beginning, or position it to the point where the copy is to start. You should leave from 5-10 seconds of blank space if the copy is to follow another program on the same cassette. Turn the Remote switch ON, and place the recorder in RECORD mode.

6. Make sure that the computer is in the RUN mode. Type: C S A V E " name " and press ENTER. The recorder will save your program.

7. To make absolutely sure that the program has been saved correctly, use the verification procedure as described in the fourth instruction of this appendix. If the error message appears on the display, check the recorder volume setting and try the CLOAD? function once more. If you still get an error, the tape copy is probably damaged. Use the CSAVE function once more and verify the load. It is recommended that you use Radio Shack Supertape or TRS-80 certified cassettes for backing up your Pocket Computer II programs.

8. Backup each program using steps 1 through 7 above.

9. Put the original cassette(s) away in a safe place and use them only for making working copies.

Appendix B—Maintenance

Maintenance of your Pocket Computer II system is not difficult. Attention to the simplest points listed below should provide the best reliability and satisfaction:

1. Keep your program cassettes in their boxes when not in use. Do not expose cassettes to temperature extremes or magnetic fields. **Never** touch the exposed surface of the tape on the front edge of the cassette.

2. Clean and demagnetize the tape heads in the recorder at regular intervals. Follow the recommendations in the cassette recorder's manual.

3. The most reliable loading and saving is achieved by operating the cassette recorder on AC current, rather than batteries.

4. Use only fresh alkaline-type batteries in the recorder when operating your system away from AC current.

5. Always press the recorder's Stop key immediately after loading or saving a program. This will release the pressure on the rubber roller which pulls the tape and prevent the roller from damaging the tape at the point of contact.

6. Always turn the computer OFF before installing it in or removing it from the Printer/Cassette Interface.

7. After removing the computer from the Printer/Cassette Interface, be sure to reinstall the protective plug to keep dirt out of the connector on the computer. **Never** touch the exposed parts on the Printer/Cassette Interface.

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